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A group of 126 University of Washington seniors, consisting of 59 women and 67 men, voluntarily retook their precollege aptitude test battery to complete an experimental "College Graduate Survey." The entrance test performance is assumed to be the intellectual level of university freshmen who progress at a normal rate and graduate in 4 years. In studying this group, an attempt was made to predict achievement criteria by evaluating the effectiveness of precollege variables such as educational orientation and experiences, religious background, parents' education, and views on marriage. Other variables considered were academic standing, significant relationships with other students, postgraduate career or study plans, and perception of the university. A comparison of precollege test scores and high school grades in predicting college GPAs and other educational achievement criteria taken from the "College Graduate Survey" revealed that mathematics was the best high school GPA predictor, and that quantitative test predictors had a greater utility than verbal tests. It was also found that high school grades are better predictors of college grades than other achievement criteria used in the Survey. The study concluded that nonverbal reasoning ability was the largest overall contributor to college achievement. (HM)

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Biographic Survey Responses of Graduating College Seniors[1]

Patricia W. Lunneborg

This report concerns 126 University of Washington seniors who completed an experimental "College Graduate Survey" when they voluntarily retook their precollege test battery. Their survey responses provide information regarding their family background, perceptions of the university, their educational orientation and experiences at UW, their plans for future education and careers, and lastly, the efficacy of precollege tests and grades for predicting different kinds of achievement criteria.

This report summarizes the background, career goals, and educational experiences of 126 University of Washington (UW) seniors who completed an experimental "College Graduate Survey" when they voluntarily retook their precollege aptitude test battery. Comparisons of this sample with all University freshmen entering at the same time (autumn 1963) revealed a group superior in all respects intellectually (Lunneborg & Lunneborg, 1968b). The entrance test performance of this select sample thus constitutes a description of the level of intellect of University freshmen likely to be successful, i.e., progress at the normal rate and graduate in four years. The present report provides a nonintellectual description of such successful students and a comparison of the efficacy of precollege variables for predicting different kinds of achievement criteria. The sample consisted of 59 women

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and 67 men with a mean age of 21.28. All were citizens of the U. S. and only 16 had not graduated from Washington state high schools.

Background of sample. In support of greater female viability all of the mothers of these seniors except one were living but 14% of their fathers were deceased. Over half of these mothers had a job outside the home. The correspondence of mother's education, particularly, with getting a college degree is illustrated in Table 1. Eighty-one percent of both fathers and mothers of the senior women had education beyond high school, and in fact, 36% of their fathers and 17% of their mothers had gone to graduate school.

Table 1

Father's and Mother's Education

	% less than HS diploma	% HS diploma	% more than HS diploma	
1967 entering freshmen	12	26	62	
Males (N = 2073)	13	26	61	Father's
Females (N = 1906)	12	25	63	
1967 graduating seniors	13	21	66	education
Males (N = 67)	18	28	54	
Females (N = 59)	7	12	81	
1967 entering freshmen	9	38	53	
Males	9	39	52	Mother's
Females	8	37	55	
1967 graduating seniors	5	25	70	education
Males	6	33	61	
Females	3	16	81	

The data for the fall 1967 entering UW freshman class were taken from Morishima's (1968) report of national and local norms for the American Council on Education Questionnaire.

Nine percent of the sample were married and rather surprisingly 82%, with no difference between the sexes, said they were single and didn't expect

to marry in the next year. Whereas 78% had a Protestant religious background, 54% indicated Protestant as their present religious preference. Only 4% had a nonreligious upbringing, but 29% had no current religious preference. Interestingly, 9% of entering freshmen in 1967 said they were likely to get married while in college (Morishima, 1968).

The distributions of undergraduate majors of the sample were:

	% Males	% Females
Business and administration	10	3
Education (all teaching except college)	1	10
Engineering	29	0
Humanities	6	31
Biological sciences	3	5
Social sciences	29	29
Physical sciences and mathematics	15	5
Health professions (dentistry, medicine, etc.)	3	12
Agriculture, forestry, veterinary medicine	3	0
Other fields (architecture, communications, etc.)	1	5

Although caution is the rule with a sample this small, there are interesting differences in the distribution of father's occupations for males and females in Table 2 which do not exist in high school seniors (Lunneborg & Lunneborg, 1968a, p. 13) where the proportions for the sexes do not differ. Females who graduate from college have fathers in service and sales occupations more than graduating males who, on the other hand, have fathers in technological occupations to a far greater extent. There is no ready explanation for this in terms of socioeconomic status which correlates negatively with the service and technology groups and positively with sales and organization. The large proportion of students intending scientific and general cultural occupations is quite consistent with previous findings.

Table 2

Father's and Own Intended Occupation of College Seniors

Using Roe's Classification

	Father's		Own intended	
	% Males	% Females	% Males	% Females
Service	13	36	9	20
Business contact	6	31	0	3.5
Organization	24	26	17	7
Technology	37	3	24	0
Outdoor	8	2	4	0
Science	9	0	23	27
General cultural	3	0	23	39
Arts and entertainment	0	2	0	3.5

Perception of the university. The modal emotional feeling towards UW was "I like it but my feelings are not strong" (57%). Very strong attachment was acknowledged by 21%, mixed feelings by 17%, and only 5% did not like the university. Following are rank orders of college atmosphere and negative characteristics.

Atmosphere	Most characteristic
Competitive 31%	Great pressure for high grades 34%
Apathetic 18%	There is little school spirit 22%
Realistic 13%	Faculty not concerned enough with teaching 13%
Practical-minded 11%	Students are like numbers in a book 12%
Warm 10%	You feel lost very easily 6%
Liberal 8%	Student academic calibre is low 5%
Intellectual 7%	Not much to do except study 2%
Social 2%	Expressing ideals in action is discouraged 2%
Victorian 0%	Athletics are overemphasized 1%

It would seem that despite the university's large enrollment anonymity is not students' greatest problem. Instead, they are more impressed by the competitiveness and low morale or school spirit so typical of large universities (Astin, 1968). Contributing to this latter condition is a large commuter

population, and indeed 61% of this senior sample were either living with their parents or in some type of off-campus dwelling. This preoccupation with academic standing is typical of students who select UW (Morishima, 1968).

Educational orientation and experiences. Rather surprising is the distribution of responses to four philosophies of higher education: vocational 16%, intellectual 19%, collegiate 29%, and nonconformist 36%. The latter is perhaps mislabeled. It read: "Education should be a search for basic values and meaning in life. One should be involved with ideas and art forms both in school and out and be concerned with one's personal identity." In a sample of UW freshmen entering in 1965 only 10% endorsed this particular philosophy which at that point in time was a good predictor of both withdrawal from school and changing major in the first quarter of university study (Lunneborg & Lunneborg, 1966). Obviously, these philosophies have different meanings in different student groups, and retrospectively as opposed to prospectively.

Students judged their courses of greatest effect in career planning and of least effect their contacts with professionals employed to assist students in this type of planning. One-quarter of them claimed never to have had discussions either with faculty or advisors, paralleling the lack of concern for the individual apparent in the ranking of negative characteristics. "Significant relationships" with other students were important to 64%. Given this influence of friends it is noteworthy that one-third of the sample said most of their close friends were going to graduate school.

Fifty-seven percent of this sample were employed during the academic year; 23% had jobs relevant to their anticipated careers, 34% jobs having nothing to do with ultimate career choice. Only three percent worked full-time. Forty percent had no "important activity" in college, while the most nominated

Table 3

Effects of College Experiences on Career Plans

	% Very important	% Fairly important	% Unimportant	% Not applicable
Academic advisor	4	18	52	26
Faculty members	17	32	29	22
Parents	13	38	36	13
Courses which helped decide what to do	36	34	30	
Courses which helped decide what not to do	33	26	41	
Professional psychological or vocational counselor	4	8	16	72
Pre-college aptitude or vocational tests	2	13	79	6
Other students	21	43	35	1
Work during college	23	30	41	6
Critical life experiences	14	14	33	39

activities were fraternities (23%) and special interest groups (17%). These students were as little involved in their university as they perceived it was concerned about them.

Only 13% of these students judged their academic standing in relation to others in the same major as below the 50th percentile. Fifty-seven percent placed themselves in either the top 10 or 25 percent which perception is probably realistic considering their cumulative GPA at graduation of 2.90 compared with 2.69 for all UW seniors spring quarter 1967 (N = 4,611). This GPA may also be compared with those for 1966 Arts and Sciences seniors

graduating in 4 years: major GPA of 3.09, non-major GPA of 2.92 (Morishima, 1967).

Educational and career plans. Forty-two percent of this group planned graduate study for the year after receiving their bachelor's. One-third, with more women than men, said instead they would be commencing their chosen career after graduation. No one was going to be a housewife, at least immediately. One-third also indicated they had a definite job lined up and were no longer looking. Actually 80% planned graduate or professional school sometime in the future, and 44% said they expected to receive support such as a fellowship, assistantship, etc. With over half applying for financial aid for post-baccalaureate study and 20% not ever going on, there were not many left to offer reasons as to why they did not apply for financial aid. However, the most frequently given reason for reluctance was "I will not need any support of this type" (13%). Very few explained not going to graduate school immediately in terms of lack of ability. They wanted practical experience first or could get desirable jobs without further schooling or had military service to complete. There was dissatisfaction expressed with graduate school prospects. Almost half of those planning graduate studies said that if absolutely free to choose one's school they would be going elsewhere. This compares with only 19% who if absolutely free to choose would study something else.

In response to naming the graduate school they would most probably attend 50 of the 78 students who gave a school named their alma mater. Schools with two or three nominations were University of California, University of Oregon, Columbia, Stanford, University of Minnesota, University of Chicago, Purdue, and University of Wisconsin.

The most popular employers in anticipated career field were: private companies with 100 or more employees (26%), school systems (21%), and colleges (17%). The most important activities in anticipated careers were: teaching (31%), research (23%), and service to patients or clients (21%). Less desirable were administration, consultation, and salesmanship. Job characteristics which mattered most were humanistic and intellectual:

	% Males	% Females
Making a lot of money	12	3
Opportunity to be original	26	15
Opportunity to be helpful to others	15	19
Avoiding a high pressure job which takes too much out of you	4	0
Living in the world of ideas	20	19
Freedom from supervision in my work	4	3
Opportunity for moderate but steady progress rather than the chance of extreme success or failure	2	3
Chance to exercise leadership	8	5
Remaining in the city or area in which I grew up	0	0
Opportunity to work with people rather than things	9	33

The sexes differed in the importance attached to a career in the future but, amazingly, family was the most preferred focus for both. "Ten years from now I hope to have a life centering around

	% Males	% Females
My home and family	28	64
The creative arts	3	7
My work as a trained technician or craftsman	2	0
Research or other scholarly work	12	5
Business or commerce	4	0
My profession (law, medicine, engineering, etc.)	21	7
Service to others (teaching, guidance, protection, etc.)	21	15
Administration, management, decision-making	9	2

Precollege variables and different achievement criteria. Table 4 provides a comparison of the efficacy of precollege tests and high school grades in predicting both college GPA's and other types of educational

achievement criteria. The latter were taken from the "College Graduate Survey" and help fill the need for both criteria independent of grades and criteria beyond the undergraduate years. The most striking feature to Table 4 is the greater utility of quantitative test predictors over verbal tests. The predictability of college grades is somewhat greater than predictability of the Survey-based criteria and in particular when the predictors are high school grades. The best high school GPA predictor was mathematics (e.g., r with all-university GPA = .54) paralleling the best test predictors which were quantitative. Note that the best test predictor for 14 of 16 criteria was either data sufficiency or quantitative judgment both aptitude measures as opposed to mathematics achievement which is largely influenced by amount of mathematics studied It must be concluded that the greatest contributer to all kinds of college educational criteria is nonverbal reasoning ability.

Table 4

Prediction of Different Criteria of Academic Achievement from the Washington Pre-College Test Battery

(Decimal points omitted)

Criteria	Predictors																	
	Vocab	Engl Usage	Spell	Read Speed	Read Comp	Data Suff	Quant Judg	Func Rela	Appl Math	Math Ach	Space Abil	Mech Reas	HS Engl	HS For Lang	HS Math	HS Nat Sci	HS Soc Stu	HS Elect
Grad school foll	18	05	19	17	17	33	35	32	30	34	13	28	01	04	10	05	05	00
Expect grad school	22	14	19	14	22	28	26	24	22	25	19	17	05	18	24	25	14	-01
Expect financial supp	11	02	12	15	18	30	28	30	28	29	10	18	-05	07	20	22	06	-02
Have decided grad school	12	06	10	13	18	30	32	29	32	30	15	26	03	08	19	14	10	-19
Would choose same school	11	11	08	-06	14	28	28	25	26	24	21	27	-05	09	25	14	-04	-03
Would choose same field	09	05	12	07	12	23	25	23	16	24	18	23	-07	12	14	12	-04	-04
Grad school before 1970	19	08	24	15	19	34	35	35	27	33	24	32	-05	06	23	10	03	-07
No obstacle to grad sch	-15	-10	-04	-07	-09	05	11	07	12	10	04	10	15	04	21	26	20	-01
Number Univ. Honors	23	19	05	21	22	31	31	27	24	30	17	29	17	07	33	29	22	04
Senior rank in major	17	17	17	17	13	22	21	19	16	22	13	11	10	15	35	28	11	01
All-University GPA	25	32	17	10	28	48	47	43	36	46	20	31	19	31	54	38	23	07
Mathematics GPA	29	38	09	08	14	41	36	31	22	38	18	18	24	26	47	33	13	04
Chem-Physics GPA	09	17	18	-18	16	37	39	36	28	39	18	26	19	21	35	28	-01	15
Adv English GPA	-05	06	-15	-06	15	28	28	24	22	27	03	29	03	05	29	13	03	-06
Foreign Lang GPA	24	29	28	-13	01	32	34	28	29	37	05	23	29	38	33	33	12	09
Art-Architect GPA	10	24	05	-06	15	20	22	17	11	23	21	00	31	33	40	22	25	06

Note.--Math GPA based on 92 cases, Chem-Physics 85, Advanced English 51, Foreign Language 85, and Art-Architecture 46. All other criteria based on N = 126.

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